

## Positions and areas of sun spots—Continued

Date	Eastern standard civil time	Heliographic		Area	
		Longitude	Latitude	Spot	Group
Apr. 15 (Naval Observatory)-----	h. m. 11 42	°	°		
		-37.0	+18.0	31	-----
		-28.0	+11.0	62	-----
		-27.0	-12.0	154	-----
		-13.5	+30.0	40	-----
		-13.5	-15.0	216	-----
		+25.0	-11.0	25	-----
		+27.0	+14.5	123	-----
		+34.5	+14.5	18	-----
		+37.0	-19.0	340	-----
Apr. 16 (Naval Observatory)-----	11 41	+52.5	-12.5	77	-----
		-21.0	+21.0	19	-----
		-17.5	+13.0	15	-----
		-13.0	-10.0	247	-----
		-10.0	+12.0	46	-----
		-5.0	+36.5	31	-----
		-2.0	-14.0	185	-----
		+2.0	+31.0	46	-----
		+37.0	-23.5	19	-----
		+43.0	+12.5	216	-----
Apr. 17 (Naval Observatory)-----	11 42	+49.5	-20.0	370	-----
		+62.0	-16.0	62	-----
		+1.0	-10.5	370	-----
		+11.0	+30.5	31	-----
		+13.0	-14.0	139	-----
		+54.0	-21.0	46	-----
		+54.0	+14.0	185	-----
		+63.0	-17.0	154	-----
		+78.0	-11.5	62	-----
		-73.5	+9.5	108	-----
Apr. 18 (Naval Observatory)-----	11 44	+14.5	-10.5	370	-----
		+24.0	+30.5	25	-----
		+28.0	-14.0	139	-----
		+67.0	+15.0	123	-----
		+79.0	-17.0	185	-----
		-87.0	-20.0	118	-----
		-57.0	+9.0	116	-----
		-50.0	-18.0	8	-----
		+27.0	-12.0	545	-----
		+39.0	+30.0	18	-----
Apr. 19 (Mount Wilson)-----	12 40	+45.0	-15.0	205	-----
		+68.0	+26.0	32	-----
		+86.0	+13.0	80	-----
		-73.5	-19.5	62	-----
		-45.0	+9.5	46	-----
		+34.5	-10.5	123	-----

## Positions and areas of sun spots—Continued

Date	Eastern standard civil time	Heliographic		Area	
		Longitude	Latitude	Spot	Group
Apr. 20 (Naval Observatory)-----	h. m. 11 49	°	°		
		+44.0	-10.5	170	-----
		+49.5	+30.0	15	-----
		+57.0	-13.5	123	-----
		-60.0	-20.0	123	-----
		-32.0	+9.5	31	-----
		-22.0	+24.5	31	-----
		+48.0	-10.5	139	-----
		+58.5	-10.5	231	-----
		+70.0	-13.5	123	-----
Apr. 21 (Naval Observatory)-----	11 40	-78.0	-15.0	20	-----
		-43.5	-20.0	55	-----
		-15.0	+8.0	28	-----
		-5.0	+24.0	88	-----
		+70.0	-12.0	377	-----
		-58.5	-15.0	93	-----
		-34.0	-20.0	58	-----
		-6.5	+9.5	25	-----
		+3.0	+24.5	93	-----
		+74.0	-10.0	154	-----
Apr. 22 (Mount Wilson)-----	18 30	+85.0	-10.0	247	-----
		-46.0	-17.0	108	-----
		-20.0	-20.0	62	-----
		+16.5	+24.0	108	-----
		-76.5	+5.0	216	-----
		-33.0	-17.5	201	-----
		-7.0	-20.0	46	-----
		+29.0	+24.0	93	-----
		-59.0	+4.0	75	-----
		-41.5	+19.0	100	-----
Apr. 23 (Naval Observatory)-----	11 53	-16.0	-16.5	150	-----
		+9.5	-20.5	50	-----
		+19.0	-17.5	25	-----
		+45.0	+25.0	50	-----
		+72.0	-8.0	75	-----
		-49.5	+4.5	170	-----
		-32.0	+21.0	93	-----
		-6.0	-16.5	185	-----
		+19.5	-20.0	31	-----
		+50.5	+24.5	31	-----
Apr. 24 (Naval Observatory)-----	12 28	-35.5	+4.5	154	-----
		-17.5	+21.0	93	-----
		+3.5	-17.5	93	-----
		+9.5	-12.5	93	-----
		+31.5	-20.0	31	-----

## AEROLOGICAL OBSERVATIONS

By L. T. SAMUELS

The month was characterized by free-air temperatures which were above normal, particularly at the higher levels. (See Table 1.) The departures were greatest from 2,000 meters to 3,000 meters at the southern stations. As might be expected under such conditions, the relative humidity was mostly below normal and the vapor-pressure departures were in general of the same sign as those for temperature.

A general excess of southerly winds occurred in the resultants for the month at all stations. (See Table 2.) The deviations from the normal were most pronounced at Royal Center and Ellendale. At the former station the northerly resultants contained a marked easterly component up to 1,250 meters instead of the more usual westerly; at Ellendale the resultant direction was south-westerly as compared to the normal northwesterly. In this connection it is interesting to find that the total precipitation at both of these stations exceeded all previous records for April since their establishment in 1918.

That a high lapse rate is not always a precursor of precipitation is shown in the kite records of Due West for April 26. A second flight was made in the afternoon at this station on account of the rapid fall in pressure. Both flights were made on the northern side of a tongue of high pressure extending inland over the South Atlantic and Gulf States. The wind direction changed but little with altitude, being westerly to west-south-

westerly at the surface and west-northwesterly above 3,000 meters. The following lapse rates prevailed during the day.

Time	M. S. L. (m.)	°C./100 m.
7:56 to 9:37 a. m.	217 to 1,757..	0.62
9:37 to 10:12 a. m.	217 to 1,757..	.98
1:30 to 2:12 p. m.	217 to 2,061..	1.10
4:12 to 4:50 p. m.	217 to 2,163..	1.06

These superadiabatic lapse rates resulted in strong convection, but owing to the low relative humidity, which for the most part was below 50 per cent, no cumulus clouds developed, the sky remaining clear throughout the day.

The heights to which the temperatures successively increased under the influence of air emanating from the rear of a slowly moving high pressure area are shown in the following table taken from the kite records of Broken Arrow for the 25th, 26th, and 27th.

M. S. L. (m.)	25th (°C.)	26th (°C.)	27th (°C.)
233	7.5	10.3	17.0
500	8.2	13.0	17.0
1,000	5.0	17.8	22.6
1,500	2.7	14.1	19.8
2,000	3.3	10.5	16.9
2,500	1.5	6.8	13.0
3,000	-0.2	-----	9.0

All of these records were obtained between the hours of 6 and 9 a. m. and therefore are comparable as regards the ordinary diurnal temperature changes. In every case the relative humidity was low in the upper levels as it usually is in a high-pressure area. It will be seen that the temperature at 3,000 meters on the 27th was higher than that which occurred in the lower levels on the 25th.

Temperature inversions are nearly always accompanied by a drop in relative humidity. However, occasionally the reverse relationship is found. Such a case occurred at Due West on the 8th, when that station was situated between a high-pressure area to the northeast and a Low to the southwest. The data in the following table are taken from the beginning and end of the kite flight.

	M. S. L. (m.)	° C.	° C./100 m.	Relative humid- ity (per cent)	Wind direc- tion
7:15 a. m.	217	13.0	-----	62	E.
8:00 a. m.	639	8.4	1.09	75	E.N.E.
8:06 a. m.	878	11.4	-1.26	100	E.S.E.
11:04 a. m.	217	12.5	-----	50	E.N.E.
10:50 a. m.	810	4.6	1.33	62	E.N.E.
10:44 a. m.	1,131	12.2	-2.37	100	S.E.

A superadiabatic lapse rate prevailed from the ground to about 500 meters, above which level there was a strong inversion of temperature wherein the relative humidity increased to the saturation point. It will be noted in the table that in both cases the wind direction in the inversion layer contained a southerly component. The shallowness of the stratus cloud layer and the low relative humidity above it, however, prevented precipitation before the following morning, by which time this region was entirely under the influence of the Low.

Easterly winds at exceptionally high altitudes prevailed over Spokane from the 9th to 14th, when that station was situated between a High to the north and a Low to the south. During this period winds from an easterly direction were observed to 9,000 meters.

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during April, 1927

TEMPERATURE (°C.)											
Altitude (m.) m. s. l.	Broken Arrow, Okla. (233 m.)		Due West, S. C. (217 m.)		Ellendale, N. Dak. (444 m.)		Groesbeck, Tex. (141 m.)		Royal Center, Ind. (225 m.)		* Wash- ington, D. C. (7 m.) mean
	Mean	De- par- ture from 9-yr. mean	Mean	De- par- ture from 7-yr. mean	Mean	De- par- ture from 10-yr. mean	Mean	De- par- ture from 9-yr. mean	Mean	De- par- ture from 9-yr. mean	
Surface.....	16.9	+1.3	16.9	-0.3	5.9	-0.1	19.8	+1.6	9.1	-1.3	15.4
250.....	16.8	+1.3	16.5	-0.4	-----	-----	19.0	+1.5	8.9	-1.2	13.1
500.....	15.5	+1.5	14.0	-0.6	5.5	-0.2	17.5	+1.6	6.9	-1.0	11.0
750.....	14.5	+1.9	12.9	-0.1	4.0	-0.3	16.4	+1.5	6.0	-0.6	9.3
1,000.....	13.8	+2.2	12.3	+0.5	3.2	0.0	16.2	+2.0	6.3	+0.7	8.1
1,250.....	13.2	+2.6	11.0	+0.5	2.5	+0.4	15.7	+2.2	5.6	+1.1	7.0
1,500.....	12.1	+2.6	9.8	+0.7	1.5	+0.6	15.4	+2.5	4.6	+1.2	5.7
2,000.....	9.7	+2.6	6.4	+0.3	-0.8	+0.8	13.8	+2.9	2.2	+1.1	3.7
2,500.....	6.6	+2.4	3.8	+0.3	-3.4	+0.9	11.4	+3.1	-0.3	+1.3	1.2
3,000.....	3.4	+2.3	1.0	+0.1	-6.2	+1.0	8.9	+3.4	-2.5	+1.7	-1.4
3,500.....	0.4	+2.4	-1.6	+0.1	-9.0	+1.2	-----	-----	-5.3	+1.5	-----
4,000.....	-2.9	+2.1	-5.4	-1.1	-11.7	+1.6	-----	-----	-7.3	+1.7	-----
4,500.....	-6.9	+1.1	-----	-----	-14.3	+1.9	-----	-----	-9.9	+1.7	-----
5,000.....	-9.8	+1.0	-----	-----	-----	-----	-----	-----	-13.2	+1.2	-----

RELATIVE HUMIDITY (%)											
Surface.....	70	+6	63	+3	69	+4	76	+4	71	+7	47
250.....	69	+5	63	+3	-----	-----	77	+5	71	+7	49
500.....	65	+2	67	+6	68	+4	77	+7	72	+8	50
750.....	61	-1	66	+5	65	+3	76	+9	70	+8	50
1,000.....	57	-3	68	+7	61	+1	68	+6	60	0	49
1,250.....	49	-8	70	+9	58	-1	61	+4	59	0	48
1,500.....	44	-11	67	+7	56	-2	47	-4	59	+2	50
2,000.....	38	-13	62	+4	56	0	37	-8	59	+1	49
2,500.....	37	-13	49	-4	57	+2	36	-8	45	-8	47
3,000.....	38	-12	51	+2	55	0	34	-9	38	-12	45
3,500.....	38	-13	40	-4	57	+1	-----	-----	38	-12	-----
4,000.....	40	-9	44	+1	67	+9	-----	-----	33	-14	-----
4,500.....	58	+7	-----	-----	70	+14	-----	-----	33	-11	-----
5,000.....	48	-4	-----	-----	-----	-----	-----	-----	31	-5	-----

RELATIVE HUMIDITY (%)

Surface.....	70	+6	63	+3	69	+4	76	+4	71	+7	47
250.....	69	+5	63	+3	-----	-----	77	+5	71	+7	49
500.....	65	+2	67	+6	68	+4	77	+7	72	+8	50
750.....	61	-1	66	+5	65	+3	76	+9	70	+8	50
1,000.....	57	-3	68	+7	61	+1	68	+6	60	0	49
1,250.....	49	-8	70	+9	58	-1	61	+4	59	0	48
1,500.....	44	-11	67	+7	56	-2	47	-4	59	+1	50
2,000.....	38	-13	62	+4	56	0	37	-8	59	+2	49
2,500.....	37	-13	49	-4	57	+2	36	-8	45	-8	47
3,000.....	38	-12	51	+2	55	0	34	-9	38	-12	45
3,500.....	38	-13	40	-4	57	+1	-----	-----	38	-12	-----
4,000.....	40	-9	44	+1	67	+9	-----	-----	33	-14	-----
4,500.....	58	+7	-----	-----	70	+14	-----	-----	33	-11	-----
5,000.....	48	-4	-----	-----	-----	-----	-----	-----	31	-5	-----

VAPOR PRESSURE (mb.)

Surface.....	13.97	+2.12	12.36	+0.33	6.40	+0.42	18.23	+2.71	8.62	+0.05	9.19
250.....	13.83	+2.09	12.11	+0.28			17.57	+2.75	8.50	+0.08	8.31
500.....	12.21	+1.81	10.90	+0.37	6.21	+0.39	15.93	+2.79	7.58	+0.29	7.43
750.....	10.79	+1.51	10.30	+0.63	5.42	+0.27	14.54	+2.76	6.84	+0.29	6.72
1,000.....	9.34	+1.00	10.20	+1.28	4.82	+0.15	12.73	+2.47	5.92	+0.02	6.16
1,250.....	7.75	-0.34	9.50	+1.39	4.36	+0.11	10.88	+2.01	5.46	+0.11	5.73
1,500.....	6.47	-0.15	8.08	+0.87	3.95	+0.12	8.09	+0.74	5.11	+0.22	5.58
2,000.....	4.85	-0.31	5.74	+0.17	3.27	+0.21	5.47	-0.09	4.27	+0.21	4.68
2,500.....	3.80	-0.30	3.42	-0.66	2.63	+0.20	4.63	+0.10	2.63	-0.47	3.42
3,000.....	3.10	-0.24	2.72	-0.39	2.11	+0.13	4.03	+0.30	1.70	-0.71	2.30
3,500.....	2.64	-0.13	1.39	-0.96	1.79	+0.17			1.30	-0.73	
4,000.....	2.23	+0.03	0.89	-0.96	1.85	+0.54			1.10	-0.64	
4,500.....	1.97	+0.08			1.59	+0.63			1.04	-0.40	
5,000.....	1.19	-0.40							0.98	-0.16	

\* Naval Air Station.

TABLE 2.—Free-air resultant winds (m. p. s.) during April, 1927

Altitude (m.) m. s. l.	Broken Arrow, Okla. (233 m.)				Due West, S. C. (217 m.)				Ellendale, N. Dak. (444 m.)				Groesbeck, Tex. (141 m.)				Royal Center, Ind. (225 m.)				Washington, D. C. (34 m.)			
	Mean		9-yr. mean		Mean		7-yr. mean		Mean		10-yr. mean		Mean		9-yr. mean		Mean		9-yr. mean		Mean		7-yr. mean	
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.
Surface.....	S. 21°W.	3.6	S. 8°W.	2.5	S. 44°W.	0.9	S. 75°W.	1.6	N. 14°E.	1.3	N. 16°W.	1.4	S. 1°W.	4.4	S. 2°E.	2.4	S. 85°E.	2.4	S. 45°W.	1.4	N. 28°W.	1.9	N. 36°W.	1.5
250.....	S. 22°W.	3.8	S. 8°W.	2.6	S. 44°W.	0.5	S. 75°W.	1.6	S. 75°W.	1.3	N. 28°W.	1.5	S. 1°W.	5.3	S. 2°E.	3.1	S. 77°E.	2.7	S. 45°W.	1.6	N. 28°W.	2.4	N. 62°W.	2.6
500.....	S. 17°W.	5.3	S. 12°W.	4.0	S. 58°W.	1.9	S. 72°W.	2.6	N. 27°E.	1.3	N. 15°W.	1.5	S. 1°W.	7.2	S. 2°E.	4.7	S. 51°E.	3.4	S. 44°W.	3.2	N. 28°W.	3.0	N. 69°W.	3.8
750.....	S. 20°W.	6.3	S. 17°W.	4.9	S. 71°W.	3.1	S. 69°W.	3.4	S. 68°E.	0.6	N. 28°W.	1.0	S. 7°W.	8.0	S. 10°W.	5.3	S. 40°E.	4.0	S. 52°W.	4.2	N. 38°W.	3.6	N. 61°W.	4.9
1,000.....	S. 28°W.	6.1	S. 28°W.	5.4	S. 72°W.	5.4	S. 66°W.	4.3	S. 64°W.	1.0	N. 57°W.	1.3	S. 15°W.	7.9	S. 20°W.	5.8	S. 27°E.	3.6	S. 58°W.	4.8	N. 38°W.	4.4	N. 61°W.	6.1
1,250.....	S. 43°W.	5.6	S. 40°W.	5.5	S. 70°W.	9.1	S. 69°W.	6.0	S. 69°W.	1.5	N. 63°W.	2.0	S. 25°W.	7.8	S. 30°W.	6.4	S. 8°E.	3.0	S. 70°W.	5.5				
1,500.....	S. 52°W.	6.8	S. 52°W.	6.1	S. 63°W.	10.3	S. 69°W.	7.3	S. 74°W.	1.9	N. 66°W.	2.5	S. 31°W.	8.1	S. 36°W.	6.9	S. 38°W.	2.8	S. 81°W.	6.9	N. 44°W.	6.4	N. 58°W.	7.5
2,000.....	S. 60°W.	8.0	S. 64°W.	7.2	S. 66°W.	10.6	S. 78°W.	8.4	S. 57°W.	2.8	N. 77°W.	3.2	S. 42°W.	6.6	S. 48°W.	7.7	S. 62°W.	4.7	S. 87°W.	7.6	N. 49°W.	8.3	N. 70°W.	8.5
2,500.....	S. 68°W.	7.6	S. 71°W.	7.8	S. 68°W.	11.8	S. 79°W.	10.0	S. 65°W.	4.0	N. 83°W.	4.9	S. 50°W.	8.5	S. 58°W.	8.3	S. 68°W.	6.3	N. 88°W.	8.6	N. 60°W.	11.9	N. 66°W.	10.4
3,000.....	S. 65°W.	8.0	S. 79°W.	7.8	S. 67°W.	13.2	S. 80°W.	10.8	S. 78°W.	6.7	N. 79°W.	6.7	S. 46°W.	10.2	S. 63°W.	10.1	S. 87°W.	13.6	N. 85°W.	10.4	N. 60°W.	15.6	N. 73°W.	11.2
3,500.....	S. 87°W.	8.4	S. 86°W.	9.8	S. 73°W.	13.2	W.	11.6	N. 85°W.	5.4	N. 78°W.	8.0	S. 18°W.	11.8	S. 68°W.	10.0	S. 75°W.	13.2	S. 86°W.	12.0				
4,000.....	S. 56°W.	10.5	S. 86°W.	11.2	N. 87°W.	13.2	N. 82°W.	12.4	S. 70°W.	9.4	N. 73°W.	9.4					S. 77°W.	11.3	N. 87°W.	13.7				
4,500.....	N. 68°W.	9.8	S. 88°W.	11.9					S. 64°W.	3.9	N. 61°W.	9.2					N. 68°W.	14.7	N. 74°W.	14.6				
5,000.....	S. 68°W.	15.1	N. 84°W.	10.8													N. 56°W.	16.7	N. 73°W.	13.2				

## GENERAL CONDITIONS

The single outstanding feature of the month, considering its subsequent effect, was the prolonged period of heavy rain over the central Mississippi Basin when the streams of the region were already at or near flood stage.

These rains were the direct cause of the unprecedented flood that is slowly passing down the lower reaches of the Mississippi and overland toward the Gulf of Mexico. The approximate area of land thus far inundated is 15,000 square miles.—*A. J. H.*

## CYCLONES AND ANTICYCLONES

April showed a reduction in the number of barometric maxima and minima, 18 Lows and 8 HIGHS being tracked.

## WEATHER IN THE UNITED STATES

## THE WEATHER ELEMENTS

By P. C. DAY, in Charge of Division

## PRESSURE AND WINDS

The marked features of the weather during April, 1927, were the persistence of moderate cyclonic conditions over the Southwest during the first two decades, and the abnormally heavy precipitation resulting therefrom as these moved to the eastward over the middle and lower Mississippi Valley, resulting in the most disastrous floods ever experienced in that river from Cairo southward and in many of its southern tributaries.

With the beginning of the month an important cyclone was central over the lower Missouri and middle Mississippi Valleys, and heavy rains had fallen during the preceding 24 hours over much of those and near-by areas. This storm lost importance rapidly and during the following 24 hours moved to the Middle Atlantic States with much decreased precipitation.

On the morning of the 4th pressure was low over the vicinity of eastern Kansas and during the following 24 hours the center moved to the Lake Superior region attended by considerable rain over the Mississippi and Ohio Valleys and Great Lakes, the rain area extending during the following day into the more eastern districts, due to the formation of a second storm that moved northward off the immediate Atlantic coast from the Carolinas to New England.

From about the 7th to 16th, inclusive, a period of 10 days, the atmospheric pressure continued low over the southern Plains and precipitation, excessive at times, was of almost daily occurrence over the immediate Mississippi Valley, particularly in Arkansas and Missouri, the eastern portions of Oklahoma, Kansas, and Nebraska, nearly the whole of Illinois, portions of Iowa, the western parts of Kentucky and Tennessee, northern Mississippi, and parts of Louisiana. The total falls on the 13th and 14th were particularly heavy over Arkansas and portions of near-by States, many stations reporting more than 5 inches in the 48-hour period and some as much as 10 inches.

After an interval of a day or so, in some sections scarcely so long, precipitation again began over much of the region mentioned above and continued with only short interruptions until the beginning of the third decade. During this period 24-hour amounts of precipitation, particularly in Arkansas, frequently exceeded 5 inches and in some cases they were above 10 inches.

After the 21st, high pressure and clear weather prevailed over the area where precipitation had persisted for so long and such cyclones as crossed the country were confined to

Rather sluggish conditions prevailed during the middle portion of the month; beginning with the 8th there was little relative change in the positions of the principal HIGHS and Lows during six observation periods (three days) from western Europe westward to the middle Pacific Ocean. In this case the high-pressure area assumed a north-south position over the two oceans. As the polar air slowly drained southward, and pressure began to fall over high latitudes, a somewhat more normal movement began to develop.—*W. P. Day.*

more northerly courses, until near the end when another low-pressure area central over Missouri on the morning of the 29th moved southeasterly to the southern Appalachian region by the following morning attended by some heavy rains in the Ohio Valley and lighter amounts over near-by areas.

Despite the heavy rains in the middle and lower Mississippi Valley and some near-by areas, no cyclone giving extensive precipitation pursued a well-defined course over any considerable distance, nor were the heavy rains usually attended by important depressions of the barometer.

Anticyclones were confined mainly to the Great Lakes region and eastward to the Middle Atlantic States, New England, and the Canadian Maritime Provinces. In fact during the first half, high pressure was nearly continuous over these areas. At the beginning of the last decade anticyclonic conditions appeared over the Rocky Mountain region and, moving eastward, favored fair weather over the central valleys and southeastern districts until near the end of the month when low pressure again overspread the Central and Eastern States.

The distribution of monthly mean pressure is shown on Chart VI; departures from normal are shown on the inset on Chart I, and the change from the previous month on the inset on Chart II.

The important destructive winds of the month were mainly of the local character attending thunderstorms and usually covered but small areas at any time. They were confined as a rule to an area extending from Texas northeastward to the Great Lakes and Ohio Valley, and occurred most frequently about the 11th to 14th and again on the 18th to 21st.

A number of tornadoes occurred during the month, mostly in Texas, Arkansas, Oklahoma, and Illinois. The tornado that struck Rocksprings, Tex., on the evening of the 12th was the most severe of the month, resulting in the loss of 74 lives and damage to property exceeding \$1,000,000. A storm of tornadic character passing northeastward from the vicinity of St. Louis, Mo., toward and over Springfield, Ill., and thence toward Chicago, on the afternoon of the 19th, caused the loss of 21 lives and property damage considerably in excess of \$1,000,000. A list of these with others of less importance, together with the details of additional wind, hail, and other damaging storms of the month appears at the end of this section.

## TEMPERATURE

The major portions of the first and second decades had moderate temperature changes with daily averages mainly above normal over the central valleys and south-